AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1.-10. (Cancelled)

11. (Currently Amended) A method for adapting a Bayesian network, comprising:

generating a set of parameters for the Bayesian network in response to a set of past observation data such that the Bayesian network models an environment having at least hardware elements;

obtaining a set of present observation data from the environment;

determining an estimate of the parameters in response to the present observation data;

adapting a learning rate for the parameters such that the learning rate responds to changes in the environment indicated in the present observation data by increasing the learning rate when an error between the estimate and a mean ~~value~~ of the parameters is relatively large and decreasing the learning rate when ~~convergences~~ convergence is reached between the estimate and the mean ~~value~~ of the parameters;

updating the parameters in response to the present observation data using the learning rate; and

using the Bayesian network to model the environment and diagnose problems or predict events in the environment.

12. (Currently Amended) The method of claim 11, wherein adapting the learning rate comprises adapting a different learning rate for each parameter of the Bayesian network.

13.-14. (Cancelled)

15. (Currently Amended) The method of claim 11, wherein a subset of values in the present observation data is unavailable when updating the parameters.

16. (Previously Presented) The method of claim 11, wherein the environment is an online environment.

17. (Previously Presented) The method of claim 16, wherein the online environment is an email system.

18. (Previously Presented) The method of claim 16, wherein the online environment is an e-commerce system.

19. (Previously Presented) The method of claim 16, wherein the online environment is a database system.

20. (Currently Amended) The method of claim 11, wherein updating the parameters comprises determining an initial set of the parameters and then updating the parameters in response to the present observation data using the learning rate.

21. (Currently Amended) A ~~hardware~~ system, comprising:

an environment having at least hardware elements to generate ~~that generates~~ a set of present observation data;

a Bayesian network to perform ~~that performs~~ automated reasoning for the environment in response to the present observation data;

an adapter to obtain ~~that obtains~~ the present observation data from the environment and to determine~~that determines~~ an estimate of a set of parameters for the Bayesian network in response to the present observation data, the adapter to adapt ~~by adapting~~ a learning rate for the parameters to respond to changes in the environment by increasing the learning rate when an error between the estimate and a mean ~~value~~ of the parameters is relatively large and decreasing the learning rate when ~~convergences~~ convergence is reached between the estimate and the mean ~~value~~ of the parameters, wherein the Bayesian network is configured to model ~~models~~ the environment and ~~diagnoses~~ diagnose problems or ~~predicts~~ predict events in the environment.

22. (Currently Amended) The ~~hardware~~ system of claim 21, wherein the adapter is configured to use~~uses~~ a different learning rate for each parameter of the Bayesian network.

23. (Currently Amended) The ~~hardware~~ system of claim 21, wherein the adapter is configured to determine ~~determines~~ the parameters by determining an initial set of the parameters and then to update~~updating~~ the parameters in response to the present observation data using the learning rate.

24.-25. (Cancelled)

26. (Previously Presented) The hardware system of claim 21, wherein a subset of values in the present observation data is unavailable.

27. (Previously Presented) The hardware system of claim 21, wherein the environment is an email system.

28. (Previously Presented) The hardware system of claim 21, wherein the environment is an e-commerce system.

29. (Previously Presented) The hardware system of claim 21, wherein the environment is a database system.

30. (New) The method of claim 11, wherein the mean of the parameters comprises a mean value for each of the parameters.

31. (New) The method of claim 12, wherein the estimate comprises an estimated value for a particular one of the parameters, and the mean comprises a mean value for the particular parameter, and wherein adapting the learning rate is based on the estimated value and mean value for the particular parameter.

30. (New) The method of claim 11, wherein the mean is a running average of values of at least one of the parameters.

31. (New) The method of claim 11, wherein the learning rate is increased in response to the error between the estimate and the mean being greater than a particular value, and the learning rate is decreased in response to the error between the estimate and the mean being less than a threshold.

32. (New) The system of claim 21, wherein the mean of the parameters comprises a mean value for each of the parameters.

33. (New) The system of claim 22, wherein the estimate comprises an estimated value for a particular one of the parameters, and the mean comprises a mean value for the particular parameter, and wherein adapting the learning rate is based on the estimated value and mean value for the particular parameter.

34. (New) The system of claim 21, wherein the mean is a running average of values of at least one of the parameters.

35. (New) The system of claim 21, wherein the learning rate is increased in response to the error between the estimate and the mean being greater than a particular value, and the learning rate is decreased in response to the error between the estimate and the mean being less than a threshold.